

**ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SPILL PREVENTION AND RESPONSE
CONTAMINATED SITES REMEDIATION and STORAGE TANK PROGRAMS**

Technical Memorandum – 01-005 R.1

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Application of Water Quality Standards to Contamination Cleanup Projects

This tech-memo clarifies how the water quality standards apply during cleanup of contaminated sites that are impacting or may impact surface waters. Water Quality Regulations generally protect all surface water, sediments, and groundwater. According to 18 AAC 70.050, groundwater is protected for Class (1) (A) uses (freshwater water supply).

18 AAC 70.050

CLASSIFICATION OF STATE WATERS.

(a) Except as specified in 18 AAC 70.230 (e), state water is protected for the following use classes:

- (1) fresh waters - Classes (1)(A) - (1)(C);
- (2) groundwaters - Class (1)(A); and
- (3) marine waters - Classes (2)(A) - (2)(D).

According to 18 AAC 70.005 the water quality standards (WQS) do not apply to approved groundwater cleanup actions; however they continue to apply to contaminated surface water and sediment.

18 AAC 70.005

NONAPPLICABILITY OF GROUNDWATER PROVISIONS.

(a) Except as provided in (b) of this section, the provisions of this chapter that are applicable to groundwater do not apply to a response, a cleanup, or a corrective action approved by

- (1) the department under 18 AAC 60.440, 18 AAC 60.080, 18 AAC 75, or 18 AAC 78, except as this chapter is specifically made applicable by 18 AAC 60, 18 AAC 75, or 18 AAC 78; or
- (2) the United States Environmental Protection Agency (EPA) under 42 U.S.C. 9601 - 9675 (Comprehensive Environmental Response, Compensation, and Liability Act of 1980) or 42 U.S.C. 6901 - 6992k (Solid Waste Disposal Act, as amended by the Resource Conservation Recovery Act), if the response, cleanup, or corrective action meets, at a minimum, the site cleanup rules at 18 AAC 75.325 – 18 AAC.75.390.

(b) This section does not affect the application of this chapter to contaminated surface water and sediment.

The Site Cleanup Rules recognize that oil and other hazardous substance cleanups must achieve the water quality standards for contaminated surface water and sediment. Key regulations are excerpted below.

18 AAC 75.345

(f) Groundwater that is closely connected hydrologically to nearby surface water may not cause a violation of the water quality standards in 18 AAC 70 for surface water or sediment. The department will, in consultation with local, state, and federal officials and the public, establish points of compliance with this subsection, taking into account the following factors:

- (1) groundwater travel time and distance from sources of hazardous substances to surface water;
- (2) the contribution of the groundwater to the chemical and physical quantity and quality of the surface water;
- (3) organisms living in or dependent upon the groundwater to surface water ecosystems;
- (4) climatic, tidal, or seasonal variations;

- (5) feasibility of attaining applicable water quality standards to support the designated uses of the surface water;
 - (6) presence of sediment contamination;
 - (7) if conducted for the site, the conclusions of a site-specific risk assessment conducted under the *Risk Assessment Procedures Manual*, adopted by reference in 18 AAC 75.340.
- (g) If the groundwater point of compliance is established at or near a property boundary or if groundwater is closely connected hydrologically to a surface waterbody, the department will, if the department determines that sentinel monitoring is necessary to ensure protection of human health, safety, or welfare, or the environment, require a responsible person to develop sentinel monitoring wells that monitor for any hazardous substances likely to migrate to the applicable point of compliance at concentrations that exceed the cleanup levels.
- (h) The department will require long-term monitoring if the department determines that monitoring is necessary to ensure protection of human health, safety, or welfare, or of the environment and if groundwater, surface water, soil, or sediment contains residual concentrations of a hazardous substance that exceed the applicable cleanup levels. If long-term monitoring is required under this subsection, a responsible person shall submit a plan and schedule for monitoring as part of the requirements for cleanup operations under 18 AAC 75.360. Unless otherwise approved by the department, a responsible person shall conduct monitoring quarterly for at least one year to establish the concentration trend. The department will evaluate the monitoring program yearly. If the monitoring indicates that the concentration trend
- (1) is increasing, the department will require additional followup monitoring and assess the need for additional cleanup; or
 - (2) is stable or decreasing, and that hazardous substance migration is not occurring, the department will decrease or discontinue the monitoring frequency and locations, if the responsible person demonstrates that continued monitoring is not necessary to ensure protection of human health, safety, and welfare, and of the environment.
- (i) The department will require groundwater, surface water, soil, or sediment monitoring to estimate contaminant flux rates and to address potential bioaccumulation of each hazardous substance at the site, if the department determines that monitoring is necessary to ensure protection of human health, safety, or welfare, or of the environment. If monitoring is required under this subsection, a responsible person shall submit a plan and schedule for monitoring as part of the cleanup operation requirements under 18 AAC 75.360.

While risk assessments can be used to develop groundwater cleanup levels they cannot be used to develop surface water cleanup levels less stringent than the WQS. The WQS are the regulatory action level for surface water and cannot be waived by cleanup project managers. Risk assessments are nonetheless helpful, as they may be the basis for establishing action levels if there are no WQS for a chemical, or for helping to prioritize the level of action and resources applied to clean-up. Water quality regulations do not adopt any specific numeric criteria for sediments; therefore risk assessments can also be useful for determining cleanup levels for sediments under the WQS.

The Water Quality Program should be involved in any action for surface water that has contamination, as it needs to track it for possible inclusion on lists for threatened or impaired waters. Typically on contaminated sites CSRP staff are the lead and Water Quality staff monitor the response action to ensure sure water quality standards are reached. Water quality staff will also be involved if they are actively involved with a water body - such as permitting, grant-funded projects, or TMDLs.

The following is an example of how Water Quality Standards apply during cleanup of a contaminated site. An arctic site is used as a case example. It clarifies how Water Quality Standards would apply in areas that are off of a gravel pad, for both areas that are clearly arctic wetlands, and for areas that are not exhibiting typical wetlands vegetation.

1. The Water Quality Standards apply if the water appears at the surface, but not for water that is below the soil surface, except in true wetlands areas. To be defined as wetlands, an area must meet three tests: water at the surface, hydric soil, and wetlands vegetation (e.g., sedges). The wetlands vegetation depends on the saturated soil conditions, and may be

affected by subsurface contamination, thus the water quality standards would be applicable to subsurface or active zone water in the wetlands area affected by cleanup action. Thus, at Naval Arctic Research Laboratory (NARL), where the pad near the Powerhouse site degrades and finally disappears towards Imikpuk Lake, and typical wetlands vegetation is not present, Water Quality Standards apply at the soil/water interface with the lake. The water must meet the Water Quality Standards at the soil/water interface, not after it has mixed with the surface water.

2. If an area is contaminated the Contaminated Sites Program has jurisdiction, however the WQ program would also have jurisdiction on the surface waters in the area.
3. The Water Quality Program does not allow the use of risk assessment for surface water, nor does the Water Quality Program provide for points of compliance. These are both tools used by the Contaminated Sites Program. If contamination is impacting surface water, the CS Program will manage the site, and one of the remediation goals will be to achieve Water Quality Standards in the receiving surface water.
4. All water quality uses apply to surface water, including ponded areas in the Arctic wetlands.
5. The Contaminated Sites Program will make the risk management decisions which, depending on circumstances, may allow, for example, natural attenuation to be used in arctic tundra wetlands. The ultimate goal is to meet Water Quality Standards, but the CS program makes the management decisions regarding how to meet that goal, and in what time frame. Although Water Quality Standards are an ARAR that must ultimately be met in surface water bodies and in true wetlands, a risk assessment can be used to assist in making the risk management decisions about how to achieve these standards, and the time frame for doing so. CS program staff should inform water quality program staff of potentially impacted water bodies, as water quality program staff may need to evaluate whether the water body should be included in the list of impaired water bodies.
6. When using a point of compliance in risk management, the point of compliance for the purposes of ensuring protection of surface water as provided for by 18 AAC 75.345 (f) is normally placed downgradient of the leading edge of a plume. If contamination has already moved off-pad, it does not make sense to put the point of compliance at the edge of the pad. In some cases it may be impractical to locate a sentinel well downgradient of the plume. In such cases, it may be acceptable to use modeling to demonstrate that a certain concentration of a contaminant at a sentinel well will attenuate such that it will meet water quality standards by the time it reaches the soil/surface water interface.

Gw-sw tech memo